CLOSED
BUTTE-SILVER BOW LANDFILL
LICENSE NUMBER 20

PIONEER TECHNICAL SERVICES

GROUNDWATER SAMPLING, SEPTEMBER 1996

OCTOBER 1996

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 7

RECEIVED 10/16/1996

File:
G.W. @
old Butte L.F.

PIONEER
TECHNICAL SERVICES, INC.
P.O. BOX 3445, BUTTE, MONTANA 59702 PHONE (406) 782-5177 FAX (406) 782-5866

RECEIVED
AUG 2 8 1996
Montana Department of
Environmental Quality
Waste Management Division

August 26, 1996

F. Patrick Crowley
Solid Waste Regulatory Lead
Solid Waste Program, Waste Management Division
Montana Department of Environmental Quality
P.O. Box 200901
Helena, Montana 59620-0901

RE: GROUNDWATER MONITORING AT THE OLD SILVER BOW LANDFILL

Dear Pat:

As we discussed on the phone recently, we are preparing for the semi-annual groundwater monitoring at the Old Silver Bow Landfill/Clark Tailings in accordance with ARM 17.50.710(1)(v). Since we first began groundwater monitoring at the site in 1993, there have been additional wells installed as part of the assessment of corrective measures process. Therefore, I'd like to review the current setting at the site and propose some minor alterations to the groundwater monitoring plan on behalf of Butte-Silver Bow.

The current point of compliance for the Old Silver Bow Landfill remains at a line defined by wells BSB-A1, BSB-A2, BSB-A3, and BSB-A4 (see attached figure). Subsequent to installation of those initial wells, two additional wells (BSB-A5 and BSB-A6) have been installed downgradient of the landfill as part of the assessment of corrective measures process. Also, an additional well (CLK-1) has been installed to assess groundwater quality downgradient of the Clark Tailings.

Of the initial wells, BSB-A4 lies downgradient of a very small portion of the landfill. No contamination has been detected in this well during previous groundwater sampling events. Also, other wells, including BSB-A3 and BSB-A6, lie downgradient of this well and would detect any contamination potentially leaving the site that would emanate from the area above the well. Therefore, we propose that well BSB-A4 be removed from the semi-annual groundwater monitoring program at this time. The well will be maintained for now in the event that it becomes necessary to monitor in this area in the future.

C:\9503\TEXT\CROWLEY7.LTR

100% post-consumer paper & 100% vegetable based inks

Wells MBMG-2 (background), BSB-A1, BSB-A2, and BSB-A3 will continue to be monitored semi-annually in accordance with ARM 17.50.710(1)(v). This includes monitoring for all Table 2 constituents at least annually. Wells BSB-A5 and BSB-A6 will be monitored semi-annually for volatile organic compounds (VOCs) and metals, the primary constituents of concern at the site. Well CLK-1 was sampled twice in July (by ARCO). Therefore, we do not intend to re-sample CLK-1 at this time. This well will be incorporated into an overall groundwater monitoring plan for the Old Silver Bow Landfill/Clark Tailings site in the future, as described below.

This plan for groundwater monitoring will be followed until the land issues for combining the Old Silver Bow Landfill and the Clark Tailings are resolved. At that time, we will propose a new groundwater monitoring plan for the combined site. We intend to include our proposed plan in the updated version of the assessment of corrective measures report.

We plan to sample this month; therefore, we would appreciate your response to this letter as soon as possible. If you have any questions, please give me a call at your convenience.

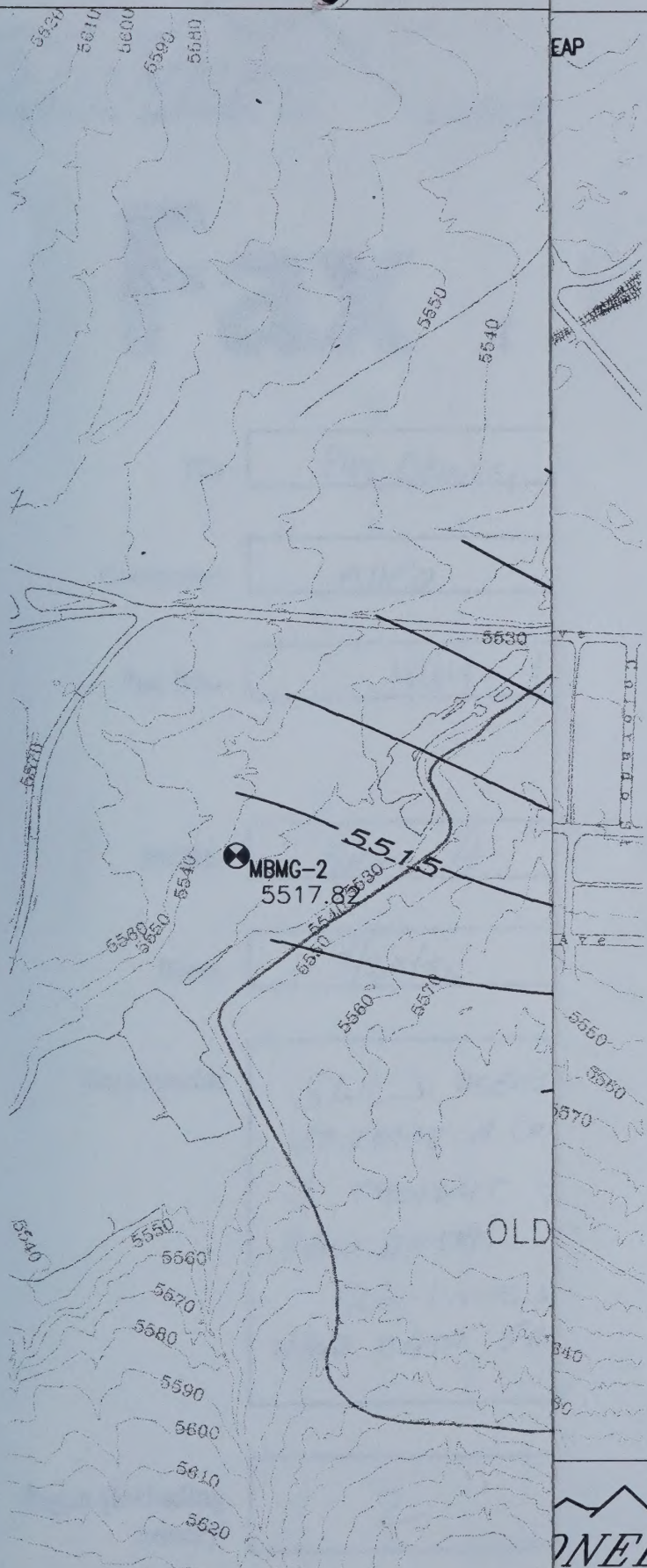
Sincerely,

Brad Archibald

Brad Archibald, P.E.
Senior Engineer

Attachment

cc: Jim Johnston, Butte-Silver Bow
Gary Keeler, Butte-Silver Bow
Shawn Bisch, Pioneer



WELL

SURFACE CONTOUR

GROUNDWATER CONTOUR

FIGURE .
OLD LANDFILL/CLARK TAILINGS
JULY 23, 1996
GW ELEVATIONS

SCALE: 1"=400'
DATE: 8/12/96

ONEER
CAL SERVICES, INC.

WELL

SURFACE CONTOUR

GROUNDWATER CONTOUR

REAP

WHITE

BLANKENSHIP
5469.36

TRAILER COURT

CLK-1
5470.99

BSB-A5
5487.57

5499.46
BSB-A1

BSB-A6
5503.32

BSB-A2
5507.75

MBMG-2
5517.82

BSB-A3
5530.78

BSB-A4
5535.42

5470

5480

5490

5505

5515

5525

CLARK TAILINGS

OLD BUTTE LANDFILL

PIONEER TECHNICAL SERVICES, INC.

FIGURE .
OLD LANDFILL/CLARK TAILINGS
JULY 23, 1996
GW ELEVATIONS

SCALE: 1"=400'
DATE: 8/12/96

4802-GW

Old Butte I.F. G.W

CU

PIONEER
TECHNICAL SERVICES, INC.
P.O. Box 3445, Butte, Montana 59702 PHONE (406) 782-5177 FAX (406) 782-586

Fax Transmittal

TO: PAT CROWLEY

Company: MDEQ

Fax No.: 449-1499

FROM: BRAD A

Date: 7/23/96

Comments: SWL's MEASURED TODAY. I'LL PREPARE A CONTOUR MAP ASAP, BUT I THOUGHT YOU MIGHT LIKE THE RAW DATA.

CLK-1 WAS SAMPLED TODAY; SHOULD HAVE DATA FRIDAY OR MONDAY.

Pages (including cover): 2

OLD LANDFILL - STATIC WATER LEVEL ELEVATIONS

WELL		T.O.C. ELEVATION	April 93	Feb. 94	Aug. 94	Jan. 95	Feb. 95	March 95	June 95	Aug. 95	Nov. 95	Dec. 95	Feb. 96	Jul. 96
MBMG-2	SWL					15.61	14.79	12.57	11.49	11.57	12.04		13.09	12.06
	ELEVATION	5529.88	5515.80	5516.33	Not Measured	5514.27	5515.09	5517.31	5518.39	5518.31	5517.84	NA	5516.79	5517.82
MW-A1	SWL				38.77	39.38	39.83	39.49	35.39	34.78	35.54		35.76	34.14
	ELEVATION	5533.60	5491.97	5496.36	5496.83	5494.22	5493.77	5494.11	5498.21	5498.82	5498.06	NA	5497.84	5499.46
MW-A2	SWL				24.88	26.25	26.51	26.24	23.87	23.09	22.16		22.32	20.15
	ELEVATION	5527.90	5498.30	5503.77	5503.18	5501.81	5501.55	5501.82	5504.19	5504.81	5505.75	NA	5505.58	5507.75
MW-A3	SWL				16.65	18.47	20.25	19.72	14.02	13.60	13.52		14.07	11.76
	ELEVATION	5542.54	5513.50	5526.68	5525.89	5523.07	5522.29	5522.82	5528.52	5528.94	5529.02	NA	5528.47	5530.78
MW-A4	SWL				18.13	22.10	22.92	18.35	11.57	10.83	13.12		16.29	10.87
	ELEVATION	5546.29	5517.94	5528.81	5528.16	5524.19	5523.37	5527.94	5534.72	5535.46	5533.17	NA	5530.00	5535.42
MW-A5	SWL									42.74	41.52	41.38	41.55	40.50
	ELEVATION	5528.07	NA	NA	NA	NA	NA	NA	NA	5485.33	5486.55	5486.69	5486.52	5487.57
MW-A6	SWL										43.81	43.42	43.54	41.35
	ELEVATION	5544.67	NA	NA	NA	NA	NA	NA	NA	NA	5500.86	5501.25	5501.13	5503.32
CLK-1	SWL													4.58
	ELEVATION	5475.57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5470.99
K. REAP	SWL													11.05
	ELEVATION	5468.29	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5457.24
BLANKENSHIP	SWL													40.95
	ELEVATION	5510.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5469.36

C:\123r4w\sample\landfill\bsb-swl.wk4

FROM : PIONEER TECH. SERVICES PHONE NO. : 406 782 5866 Jul. 23 1996 04:10PM P2

Old Butte L.F. GW

PIONEER
TECHNICAL SERVICES, INC.
P.O. BOX 3445, BUTTE, MONTANA 59702 PHONE (406) 782-5177 FAX (406) 782-5866

April 29, 1996

RECEIVED
APR 30 1996
Montana Department of
Environmental Quality
Waste Management Division

Mr. Pat Crowley
MDEQ/Waste Management Division
P.O. Box 200901
Helena, MT 59620-0901

Dear Pat:

The purpose of this letter is to propose that sampling the groundwater wells at the old Butte - Silver Bow Landfill for certain Table 2 analytes--specifically, EPA Method 8151 (chlorinated acids)--be conducted on an annual basis only, rather than semi-annually as is currently conducted under the assessment monitoring program. The reason for proposing discontinuing semi-annual sampling for these analytes is due primarily to the fact that all of the Method 8151 "hits" have been at extremely low concentrations, which are below the laboratory practical quantitation limit (PQL) in all instances except one [2,4,5 - TP (Silvex) was detected slightly above the PQL in well BSB-A2 during August, 1995]. The data also indicate that the Method 8151 "hits" have not been replicated during the three sampling events where groundwater samples were analyzed for these compounds. Additionally, most of the EPA Method 8151 hits have been observed in the background well (well no. MBMG-2) rather than in the downgradient wells, see the attached data summary table.

Thus far, all of the Method 8151 "hits" have been three to four orders-of-magnitude less than the established drinking water MCL concentrations for those analytes which have MCLs. Under this proposal, EPA Method 8151 analytes would still be monitored on an annual basis when full Table 2 analyses are conducted at the landfill; however, monitoring these analytes on a semi-annual basis does not appear to be warranted. According to ARM 16.14.708 (1) (b), "The department may delete any of the Table 2 constituents required under assessment monitoring if it can be demonstrated that the removed constituents are not reasonably expected to be in or derived from the waste contained in the unit." This can be demonstrated by the fact that most of the Method 8151 "hits" have occurred in the background well at the site.

As you have discussed with Brad Archibald, a revised groundwater monitoring plan for the landfill and the Clark Tailings, designed to assess the effectiveness of the corrective measures employed at the site, will be presented in the final Corrective Measures Assessment. Your response to this request will be considered in the proposed monitoring plan.

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I look forward to your response on this matter. Feel free to contact myself or Brad Archibald at 782-5177. Thank you.

Sincerely,

Shawn Bisch
Environmental Engineer

Encl.

cc: Jim Johnston, Butte-Silver Bow
Gary Keeler, Butte-Silver Bow
Brad Archibald, Pioneer

OLD BUTTE / SILVER BOW LANDFILL - GROUNDWATER SAMPLING RESULTS SUMMARY (EPA METHOD 8151, ug/L)

WELL NO. :	MBMG-2			BSB -A1			BSB -A4			DRINKING WATER
DATE :	Aug. 1994	Aug. 1995	Feb. 1996	Aug. 1994	Aug. 1995	Feb. 1996	Aug. 1994	Aug. 1995	Feb. 1996	MCL / MCLG
2,4 - D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	70 / 70
Dacthal	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
4 - Nitrophenol	<0.50	<0.50	<0.50 (0.30J)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Picloram	<0.50	<0.50 (0.096J)	<0.50 (0.21J)	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	500 / 500
2,4,5 - TP (Silvex)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	50 / 50

WELL NO. :	BSB -A3			BSB -A2			BSB -A5			DRINKING WATER
DATE :	Aug. 1994	Aug. 1995	Feb. 1996	Aug. 1994	Aug. 1995	Feb. 1996	Aug. 1994	Aug. 1995	Feb. 1996	MCL / MCLG
2,4 - D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NR	<1.0(0.11J)	NR	70 / 70
Dacthal	<1.0	<1.0	<1.0	<1.0	<1.0(0.17J)	<1.0	NR	<1.0	NR	
4 - Nitrophenol	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NR	<0.50	NR	
Picloram	<0.50	<0.50(0.083J)	<0.50	<0.50	<0.50(0.48J)	<0.50	NR	<0.50(0.091J)	NR	500 / 500
2,4,5 - TP (Silvex)	<0.20	<0.20(0.15J)	<0.20	<0.20	0.66	<0.20	NR	<0.20	NR	50 / 50

NR = Not Requested

16:02:17 07 JUN 1996

LIC#	WELL NO.	SAMPLE DATE	HITS	HITS DESCRIPTION	H	BCL HITS	MV...
20							
20	BSB-A6 (BSB-GW-10)	11-10-95					
20	BSB-A6 (BSB-GW-10)	02-09-96					
20	BSB-GW-1 (MBMG-2)	04-08-93					
20	BSB-GW-1 (MBMG-2)	02-14-94					
20	BSB-GW-1 (MBMG-2)	08-31-94					
20	BSB-GW-1 (MBMG-2)	01-06-95					
20	BSB-GW-1 (MBMG-2)	02-01-95					
20	BSB-GW-1 (MBMG-2)	03-01-95					
20	BSB-GW-1 (MBMG-2)	08-02-95					
20	BSB-GW-1 (MBMG-2)	02-08-96					
20	BSB-GW-1-DUP	02-01-95					
20	BSB-GW-2 (BSB-A1)	04-08-93					
20	BSB-GW-2 (BSB-A1)	02-14-94					
20	BSB-GW-2 (BSB-A1)	08-31-94					
20	BSB-GW-2 (BSB-A1)	01-06-95					
20	BSB-GW-2 (BSB-A1)	02-01-95					
20	BSB-GW-2 (BSB-A1)	03-01-95					
20	BSB-GW-2 (BSB-A1)	08-02-95	93-72-1	2,4,5-TP (Silvex)			
20	BSB-GW-2 (BSB-A1)	02-08-96					
20	BSB-GW-2-DUP	04-08-93					
20	BSB-GW-3 (BSB-A4)	04-08-93					
20	BSB-GW-3 (BSB-A4)	02-15-94					
20	BSB-GW-3 (BSB-A4)	08-31-94					
20	BSB-GW-3 (BSB-A4)	01-06-95					
20	BSB-GW-3 (BSB-A4)	02-01-95					
20	BSB-GW-3 (BSB-A4)	03-01-95					
20	BSB-GW-3 (BSB-A4)	08-02-95					
20	BSB-GW-3 (BSB-A4)	02-08-96					
20	BSB-GW-3-DUP	02-01-95					
20	BSB-GW-4 (BSB-A3)	04-08-93					
20	BSB-GW-4 (BSB-A3)	02-15-94					
20	BSB-GW-4 (BSB-A3)	08-31-94					
20	BSB-GW-4 (BSB-A3)	01-06-95					
20	BSB-GW-4 (BSB-A3)	02-01-95					
20	BSB-GW-4 (BSB-A3)	03-01-95					
20	BSB-GW-4 (BSB-A3)	08-02-95					
20	BSB-GW-4 (BSB-A3)	02-08-96	93-72-1	2,4,5-TP (Silvex)			
20	BSB-GW-5 (BSB-A2)	04-08-93					
20	BSB-GW-5 (BSB-A2)	02-15-94					
20	BSB-GW-5 (BSB-A2)	08-31-94					
20	BSB-GW-5 (BSB-A2)	01-06-95					
20	BSB-GW-5 (BSB-A2)	02-01-95					
20	BSB-GW-5 (BSB-A2)	03-01-95					
20	BSB-GW-5 (BSB-A2)	08-02-95	93-72-1	2,4,5-TP (Silvex)		.15	
20	BSB-GW-5 (BSB-A2)	02-08-96	93-72-1	2,4,5-TP (Silvex)			
20	BSB-GW-5-DUP	02-15-94					
20	BSB-GW-5-DUP	09-30-94					
20	BSB-GW-5-DUP	02-08-96	93-72-1	2,4,5-TP (Silvex)			
20	BSB-GW-7 (BSB-A5)	02-09-96					
20	BSB-SG-1 (GEOPROBE)	02-07-96					
20	BSB-SG-12 (GEOPROBE	02-08-96					
20	FIELD-BLANK	02-15-94					
20	FIELD-BLANK	01-06-95					
20	FIELD-BLANK	02-01-95					
20	FIELD-BLANK	03-01-95					
20	FIELD-BLANK	03-01-95					
20	FIELD-BLANK	08-02-95	93-72-1	2,4,5-TP (Silvex)		.66	
20	FIELD-BLANK	08-02-95					
20	FIELD-BLANK	02-08-96	93-72-1	2,4,5-TP (Silvex)			

16:02:17 07 JUN 1996

LIC#.	WELL NO.....	SAMPLE ..... DATE	HITS.....	HITS DESCRIPTION.....	H	BCL	HITS	MV...
20	FIELD-BLANK	02-08-96	93-72-1	2,4,5-TP (Silvex)				
20	LAB-BLANK	02-23-94						
20	LAB-BLANK	02-24-94						
20	LAB-BLANK	09-06-94						
20	LAB-BLANK	09-09-94						
20	LAB-BLANK	09-16-94						
20	LAB-BLANK	10-06-94						
20	LAB-BLANK	11-10-94						
20	LAB-BLANK	01-09-95						
20	LAB-BLANK	02-08-95						
20	LAB-BLANK	02-14-95						
20	LAB-BLANK	03-03-95						
20	LAB-BLANK	03-14-95						
20	LAB-BLANK	08-02-95						
20	LAB-BLANK	11-15-95						
20	LAB-BLANK	02-14-96						
20	LAB-BLANK	02-21-96						
[illegible]	MBMG1	04-08-93						
[illegible]	MBMG3	04-08-93						
20	MWA10	04-08-93						
20	MWA5	12-21-95						
20	MWA6	12-21-95						

82 Rows Processed

CLOSED
BUTTE-SILVER BOW LANDFILL
LICENSE NUMBER 20

PIONEER TECHNICAL SERVICES

GROUNDWATER SAMPLING, FEBRUARY 1996

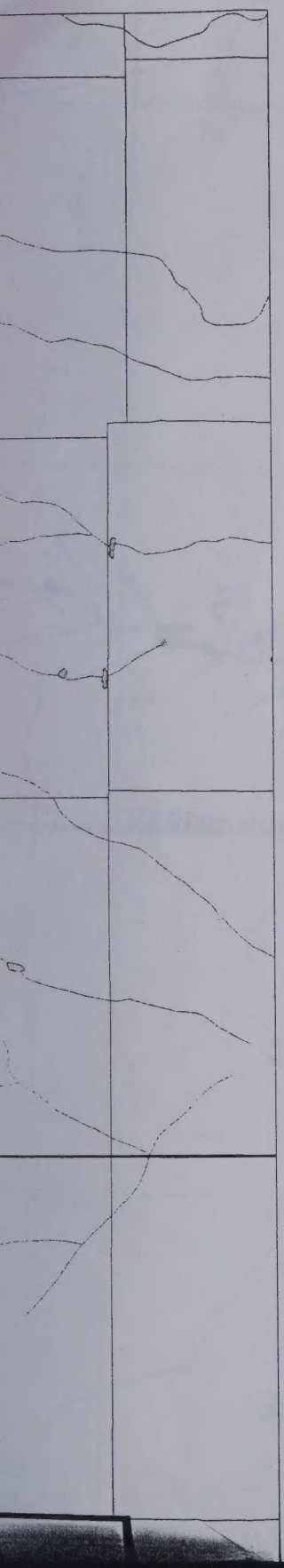
APRIL 1996

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 7

RECEIVED 4/10/1996

Old Butte I.P.
G. Water

Plate 2
Butte, Montana
Mine Flooding
Study Area
Water Table
Contours for the
Alluvial Aquifer
December 1993



Legend

Water Elevation Contour	Water
Indefinite Water Elevation Contour	Tailings
	Swamp

Plate 2

Butte, Montana

Mine Flooding

Study Area

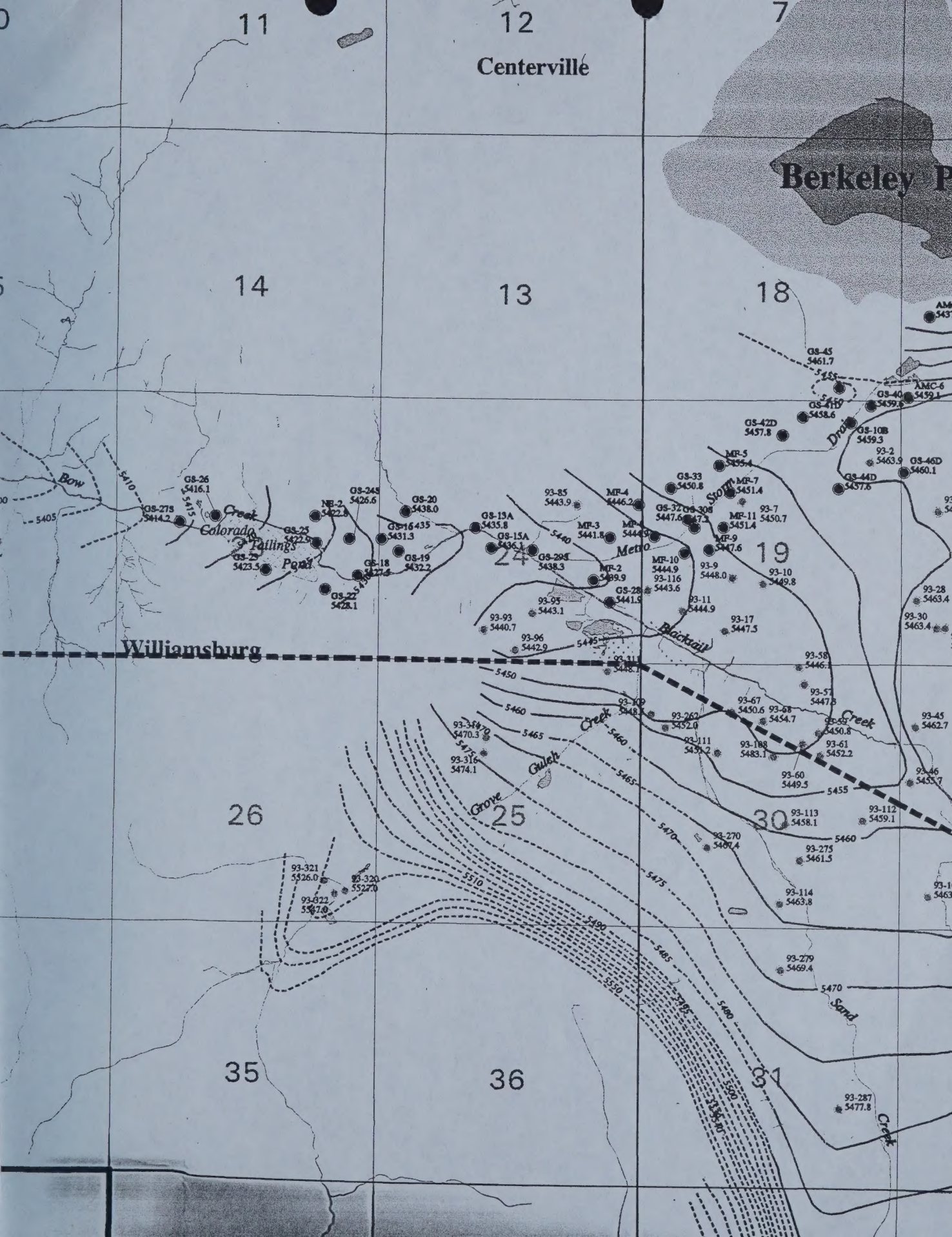
Water Table

Contours for the

Alluvial Aquifer

December 1993

Legend


Centerville
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GS-45 5461.7
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AMC-6 5459.1
GS-41D 5458.6
GS-42D 5457.8
GS-10B 5459.3
93-2 5463.9
GS-46D 5460.1
GS-44D 5457.6
MF-5 5455.4
MF-7 5451.4
GS-33 5450.8
GS-32 5447.6
GS-30B 5447.2
MF-11 5451.4
93-7 5450.7
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93-112 5459.1
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93-287 5477.8
GS-26 5416.1
GS-27S 5414.2
GS-25 5422.9
GS-25 5423.5
GS-24S 5426.6
NE-2 5422.8
GS-20 5438.0
GS-16 5431.3
GS-18 5427.6
GS-19 5432.2
GS-22 5428.1
GS-13A 5435.8
GS-15A 5436.1
GS-29S 5438.3
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93-262 5452.0
93-111 5452.2
93-188 5483.1
93-349 5470.3
93-316 5474.1
93-321 5526.0
93-320 5527.0
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